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Published to advance the Science of cold-blooded vertebrates

FISHES FROM SOUTHERN WISCONSIN

In 1910, at the writer's request, Mr. N. Hollister made a small collection of fishes in Turtle Creek, Lake Como and Delavan Lake, near Delavan, Wisconsin. These fishes are deposited in the U. S. National Museum, Washington, D. C.

Since Mr. Hollister made no attempt to sort the specimens in his catch the numbers probably represent about the relative abundance of the different species at the points seined.

Fishes from Turtle Creek, Wisconsin, October 10th & 11th, 1910.

Notropis hudsonius De Witt Clinton (19). These fish agreed with the descriptions of *Notropis hudsonius* and with specimens identified as belonging to that species except that the peritoneum was black. The same phenomenon has been noted at Ithaca, N. Y., where fishes from certain restricted localities all showed a dark peritoneum. This color seems to be, perhaps, associated with the food. One of the localities at Ithaca was near the mouth of a small sewer where the bottom of the stream was covered with a thick slimy black mass. *Notropis atherinoides* Rafinesque (10); *Notropis cornutus* [Mitchill] (580); *Notropis* sp. (estimated), (1000). These fish belong in the group which has been known under the names

Notropis heterodon, *Notropis cayuga*, *Notropis anogenus*, etc. Sixty-five of them have the chin black and would go in the nominal species *heterodon* and *anogenus*. Many of the others have the chin entirely pale and belong in the nominal species *cayuga*. Others have all degrees of color on the symphysis of the lower jaw.

There is also a complete gradation in the angle of the mouth from practically horizontal to nearly vertical. Similar conditions have been found in fishes from Lake Ontario. There the pigmentation has seemed to have a little relation to habitat. Those fishes from the clearer water along the shore of a bay would have more black on the head and along the lateral line than fishes from the more cloudy water in the lower courses of the streams. There is some probability that changing the environment of the fishes would also change the color.

On the other hand, there is a possibility that there are really two species and that the differences are the result of hybridization. Under certain conditions hybridization in nature is very common.

The writer once found in some pools near Chesapeake Beach, Maryland, very large numbers of three species of *Fundulus* breeding in very restricted waters. Hundreds, if not thousands of fish were emitting spawn and milt at the same time in a space of not much over a hundred square feet of water a few inches deep. About half the fish taken in those pools showed such intergrading characters that they could not be identified. Similar conditions may occur in the breeding places of these minnows.

There is a large group of minnows having a strong resemblance to the species under discussion but which have been placed in several groups or subgenera mainly on the character of the pharyngeal teeth. In many cases this character has been applied in such a manner as to have little value.

Where the count of pharyngeal teeth is made on

the cleaned bones it is practically worthless because the bone heals over very quickly where a tooth has been lost and the new tooth developing in the surrounding tissues is not attached to the bone until fully formed. The result is that a fish which always has the teeth 2; 4-4; 2 is given the formula 0, 1 or 2; 4-4; 2, 1 or 0.

The tissues surrounding the pharyngeal bones should be removed with them and the teeth examined *in situ* from the side which is exposed in life.

The minnows which have received the names *atherinoides*, *cayuga*, *heterodon*, *anogenus*, *muskoka*, etc., should be examined carefully and the whole group of transparent, round-bodied, slender forms with large, distinct, dark-edged scales studied as a group rather than as representatives of several groups.

Hybopsis kentuckiensis [Rafinesque], (25). *Hybopsis kentuckiensis* [Rafinesque] (?) (1). This specimen had no trace of a barbel but in other respects seemed to agree with this species.

Pimephales notatus [Rafinesque] (74); *Rhinichthys atronasmus lunatus* [Cope] (1); *Campostoma anomalum* [Rafinesque] (22); *Catostomus commersonii* [Lacepede] (6); *Moxostoma aureolum* [Le Sueur] (1); *Erimyzon sucetta* [Lacepede] (1); *Fundulus diaphanus* [Le Sueur] (3); *Labidesthes sicculus* [Cope] (2); *Boleosoma olmstedii* [Storer] (2); *Lepomis gibbosus* [Linn.] (50); *Ambloplites rupestris* [Rafinesque] (1); *Micropterus salmoides* [Lacepede] (7).

Fishes from Delavan Lake, Wisconsin, October 12th & 18th, 1910.

Esox lucius Linn. (1); *Lepomis incisor* [Cuvier and Valenciennes] (1); *Lepomis gibbosus* [Linn.] (1).

Fishes from Lake Como, Wisconsin, October 11th &
28th, 1910.

Ameiurus natalis [Le Sueur] (3); *Notemigonus chrysoleucas* [Mitchill] (3).

It is probable that collections at other seasons in these localities would show many other species as well as different relative numbers of the species found.

ALFRED C. WEED,
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1920 FISH RECORDS FROM ORIENT,
LONG ISLAND

In this brief list only data that seems of special interest is given.

Carcharhinus obscurus. Dusky Shark. One 30 inches in total length captured on November 1st, from the Sound, is my latest date for the species.

Carcharias littoralis. Sand Shark. One June 28th, 3 feet in total length, from Gardiner's Bay.

Squalus acanthias Spined Dogfish. Several adults were taken in July and August. This is the first record of the adults in midsummer, although the young are frequently abundant at that season. It was discovered that the adults were common on the deep-water ledges in the Sound in August at the time the young were entering the traps by thousands. Many of these young were only a few hours old.

Raja eglanteria. Clear-nosed Skate. One adult, November 1st.

Dasyatis centrura. Sting Ray. One half-grown individual on September 27th. In former years it was abundant in the Sound and Gardiner's Bay. It is at present very rare and irregular.

Anchoviella brownii. Striped Anchovy. A specimen $5\frac{7}{8}$ inches in total length was taken on June 15th. It was common on June 17th.

Anchoviella mitchilli. Common Anchovy. Taken on June 11th, when it was common.